

EUROMOT POSITION

13 February 2015



Amendment proposals on emission limit values for liquid fuelled engines in the “*Proposal for a Directive of the European Parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants*” (COM(2013)919 final) as of 18 Dec 2013

EUROMOT proposes setting emission limit values aligned with international practice as found in the amended Gothenburg Protocol, the EU Best Available Reference Document (BREF) for Large Combustion Plants (LCP) 2006, or U.S. (CI) legislation. Although for the Commission the “*favoured policy option is emission reduction consistent with the Gothenburg Protocol.*” /1/, many important aspects of the Gothenburg Protocol /6/ are absent in the MCP proposal.

Emission limits shall be technically and economically feasible. Proposed particulate limit values (Annex II Part 1: table 2, part 2: table 2) for “liquid fuels” are for medium/slow speed engine types beyond Best Available Technology (BAT). Other proposed emission limits in these tables for medium / slow speed engines are only achievable by use of high cost secondary emission abatement techniques (e.g. tables 2 in Annex II:Part 1/Part 2 and table in Annex III, NOx limits are achievable only by use of SCR (See EGTEI cost increase estimate /3/) **which is not in alignment with document /2/ stating that limit values should mainly to be based on application of primary measures.**

The special operation conditions faced by communities in remote areas, such as islands, need to be taken into consideration (both for new and existing stationary engines). This could be done by **introducing similar flexibility mechanisms as included in the recently amended Gothenburg Protocol.**

President:
Georg Diderich

General Manager:
Dr Peter Scherm

ENGINE IN SOCIETY

A European Interest Representative (EU Transparency Register Id. No. 6284937371-73)

A Non Governmental Organisation in observer status with the UN Economic Commission for Europe (UNECE) and the International Maritime Organisation (IMO)

In EU the SO₂ emissions have been reduced by 82 % between 1990 and 2010. All EU countries fulfil their SO₂ commitments in NEC Directive 2001/81/EC. Nevertheless, the MCP proposal includes SO₂ emission limits which for engines running on Heavy Fuel Oil (HFO) are not viable without FGD (Flue gas Desulphurization) and FGD is beyond BAT for most MCPs and only option left is then expensive Light Fuel Oil (LFO)/Gas Oil. In some remote areas and islands HFO is one of the backbones in the electricity production and in order to secure competitive energy costs in these areas where ambient air quality is not an issue a flexibility should be introduced. External costs for the pollutants /9/ differ greatly depending on countries/areas with Mediterranean Sea at lower and the Netherlands at the higher end.

Furthermore, existing plant limits shall not be set stricter than those for new plants.

(Amendment proposals on both options in detail provided on the next page)

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For more information please contact:

European Association of Internal Combustion

Engine Manufacturers – EUROMOT

Dr Peter Scherm, +49 69 6603-1354, peter.scherm@euromot.eu

EU Transparency Register ID number: 6284937371-73

1. Amendment proposal for emission limit values for new liquid fuelled engines (15 vol-% O₂ reference)

- a) Annex II, Part 2: Emission limit values for new medium size combustion plants (text proposed by the Commission)

2. Emission limit values (mg/Nm³) for engines and gas turbines

Pollutant	Type of installation	Liquid fuels	Natural gas	Gaseous fuels other than natural gas
SO ₂	Engines and gas turbines	60	---	15
NO _x	Engines	190 ⁽¹⁾	95 ⁽²⁾	190
	Gas turbines ⁽³⁾	75	50	75
Particulate matter	Engines and gas turbines	10	---	---

⁽¹⁾ 225 mg/Nm³ for dual fuel engines in liquid mode

⁽²⁾ 190 mg/Nm³ for dual fuel engines in liquid mode

⁽³⁾ ...

- b) Annex II, Part 2: Emission limit values for new medium size combustion plants (amendment proposed by Euromot)

Emission limit values (mg/Nm³) for new engines and gas turbines

Pollutant	Type of combustion plant	Gas Oil	Liquid fuels other than Gas Oil	Natural gas	Gaseous fuels other than natural gas
SO ₂	Engines and gas turbines	-	120⁽⁴⁾⁽¹¹⁾	-	No limit or 120
NO _x	Engines (3a) (5)	190⁽¹⁾	190 ^{(1)(2a)}	190 ⁽¹²⁾	190 ⁽¹²⁾
	Gas turbines	75	75	50	75
Particulate Matter	Engines and gas turbines	-	50⁽⁷⁾	-	-

- ⁽¹⁾ **225 mg/Nm³ for dual fuel engines in liquid mode.**
- ⁽²⁾
- ^(2a) **225 mg/Nm³ for diesel engines with a total rated thermal input equal to or below 20 MW with ≤ 1200 rpm.**
- ⁽³⁾
- ^(3a) **Engines running up to 1500 hours per year may be exempted from compliance with these emission limit values in case they are applying primary measures to limit NOx emissions and meet the emission limit values set out in footnotes ⁽⁵⁾.**
- ⁽⁴⁾ **Until 01/01/2025, 590 mg/Nm³ for Diesel and dual fuel engines being part of SIS and MIS**
- ⁽⁵⁾ **Until 01/01/2025 in SIS and MIS [...], 1850 mg/Nm³ for dual fuel engine in liquid mode and 380 mg/Nm³ in gas mode; 1300 mg/Nm³ for diesel engines with ≤ 1200 rpm equal to or below 20 MW and 1850 mg/Nm³ for diesel engines above 20 MW; 750 mg/Nm³ for diesel engines with > 1200 rpm.**
- ⁽⁶⁾
- ⁽⁷⁾ **Until 01/01/2025, 75 mg/Nm³ for diesel engines being part of SIS and MIS**
- ⁽⁸⁾
- ⁽⁹⁾
- ⁽¹⁰⁾
- ⁽¹¹⁾ **After 01/01/2025, 295 mg/Nm³ for diesel and dual fuel engines being part of SIS and MIS**
- ⁽¹²⁾ **380 mg/Nm³ for the operation of dual fuel engines if the Methane Number of the gaseous fuel is below 80**

Justification

For (2a), (3a), (5): NOx limit

In order to achieve a cost efficient balance between environment and economical aspects, additional flexibilities as included in the Gothenburg Protocol for new stationary engine need to be introduced also into MCP. See footnotes b (“areas with restricted existing infrastructure”), c (occasional usage plants with limited yearly operation hours) d (“sudden unforeseen interruption in gas supply” case) flexibilities, see Annex 1 (below Table 4) of this document for more information

For (7): Particulate Matter limit

The proposed particulate matter (PM) emission limit value for medium/slow speed liquid-fired engines is even stricter than the current values set for large combustion plants (LCP) in the EU best available technology reference document (LCP BREF, 2006 /8/), i.e. beyond BAT. Currently available stationary medium/slow speed engine plants (by applying primary or secondary emission abatement measures) running on the light-fuel oil or heavy fuel oil cannot fulfil the proposed particulate matter emission limit value. Current EU LCP stipulates for HFO (Heavy Fuel Oil) < 50 mg/Nm³ (15 % O₂) as particulate emission BAT at steady state and 85 .. 100 % load of the engine. There is also a different view expressed by a EU member state on a particulate limit of 100 mg/Nm³ (15 % O₂) as referred to in the LCP BREF.

*PM reduction technologies based on catalysts, such as Diesel Particulate Filters (DPFs) for engines are very sensitive to the sulphur content of the fuel. This technology is used on smaller high-speed engines designed to operate on ULSD (ultra-low sulphur Diesel with 10 ppm (= 0.001 wt-%) sulphur), typically in the automotive industry. The technology is not suitable for the current stationary engine fuel sulphur levels. Typically, DPFs are only available for small **high-speed type engines** of less than 5 MWth (Euromot estimate). Current EU BREF stipulates “A large capacity plant can also consist of a number of several aggregates with comparatively small capacities. In this case, each individual aggregate can be equipped with filters for particles especially soot. Dust emissions from engines of up to 1.3 MW fuel input can be reduced below emission values of 20 mg/Nm³”. Note: The US only applies limit values that might require a DPF to engines of less than 10 Litres/cylinder (i.e. on small units).*

For (4), (11): SO₂ limit in SIS, MIS

In EU the SO₂ emissions have been reduced by 82 % between 1990 and 2010. All EU countries fulfill their SO₂ commitments in NEC Directive 2001/81/EC /5/. Nevertheless, the MCP proposal of 60 mg/Nm³ for SO₂ means that diesel and dual fuel engines operating on HFO have to install a FGD (Flue Gas Desulphurization) unit or transfer to a low sulfur light fuel oil (LFO). A pre-requisite for FGD is a good existing infrastructure for end product disposal/recycling, availability of big amounts of clean water (depending on FGD method) which is not sustainable in arid areas, spare parts, etc.. This is not feasible in remote areas such as SIS, MIS. Most liquid fired diesel and dual fuel based engine plants use HFO as light fuel (LFO) is too costly. LFO typically is 1.7 .. 2.4 times /4/ more expensive than low sulphur HFO. Therefore the option to operate on maximum 1.0 wt-% S HFO (about 590 mg/Nm³ (15 % O₂) SO₂) until 01.01.2025 and afterwards 0.5 wt.-% S HFO equals about 295 mg/Nm³ (15 % O₂) SO₂ emission) should be possible for remote areas such as SIS and MIS in order to secure a reasonable priced and secure electricity supply to customers such as households in these areas. For more information about specific challenges in remote areas such as MIS/SIS see source /7/.

2. Amendment proposal for emission limit values for existing liquid fuelled engines (15 vol-% O₂ reference)

a) Annex II, Part 1: Emission limit values for existing medium size combustion plants (text proposed by Commission)

2. Emission limit values (mg/Nm³) for engines and gas turbines

Pollutant	Type of installation	Liquid fuels	Natural gas	Gaseous fuels other than natural gas
SO ₂	Engines and gas turbines	60	-	15
NO _x	Engines	190 ⁽¹⁾	190 ⁽²⁾	190 ⁽²⁾
	Gas turbines ⁽³⁾	200	150	200
Particulate matter	Engines and gas turbines	10	---	---

- (¹) 1850 mg/Nm³ in the following cases:
 (i) for diesel engines the construction of which commenced before 18 May 2006;
 (ii) for dual fuel engines in liquid mode
- (²) 380 mg/Nm³ for dual fuel engines in gas mode.
- (³) ...

b) Annex II, Part 1: Emission limit values for existing medium size combustion plants (Amendment proposal by Euromot)

Emission limit values (mg/Nm³) for engines and gas turbines

Pollutant	Type of combustion plant	Gas Oil	Liquid fuels other than Gas Oil	Natural gas	Gaseous fuels other than natural gas
SO ₂	Engines and gas turbines	-	120 ⁽⁸⁾	-	No limit or 120
NO _x	Engines ⁽⁹⁾⁽¹⁰⁾⁽¹¹⁾	190⁽¹⁾	190 ⁽¹⁾	190 ⁽²⁾	190 ⁽²⁾
	Gas turbines	200	200	150	200
Particulate matter	Engines and gas turbines	-	50⁽¹²⁾	-	-

- (¹) 1850 mg/Nm³ in the following cases:

- (i) for diesel engines the construction of which commenced before 18 May 2006;
- (ii) for dual fuel engines in liquid mode.

(1a)

(1b)

(2)

380 mg/Nm³ for dual fuel engines in gas mode

(3)

(4)

(5)

(6)

(7)

(8)

After 01/01/2025 (> 5 MWth plant), otherwise 2030: 295 mg/Nm³ for diesel and dual fuel engines part of SIS and MIS

(9)

Engines running up to 1500 hours per year may be exempted from compliance with these emission limit values in case they are applying primary measures to limit NOx emissions and meet the emission limit values set out in footnotes ^(10,11).

(10)

Engines commenced before 18 May 2006: 2000 mg/Nm³ dual fuel engine in liquid mode; 1900 mg/Nm³ for diesel engines with < 1200 rpm equal or below 20 MW and 2000 mg/Nm³ for diesel engines above 20 MW; 750 mg/Nm³ for diesel engines with > 1200 rpm.

(11)

Engines commenced after 18 May 2006: 1850 mg/Nm³ for dual fuel engine in liquid mode; 1300 mg/Nm³ for diesel engines with ≤ 1200 rpm equal to or below 20 MW and 1850 mg/Nm³ for diesel engines above 20 MW; 750 mg/Nm³ for diesel engines with > 1200 rpm

(12)

Until 01/01/2025, 75 mg/Nm³ in MIS/SIS

Justification

Existing plant limits shall not be set stricter than for new plant

3. Annex III amendment proposal

- a) Annex III. Emission limit values for medium size engine combustion plants (text proposed by Commission)

Pollutant	Type of installation	Liquid fuels	Natural Gas	Gaseous fuels other than natural gas
NOx	Engines	150	35	35
	Gas Turbines

b) Annex III, Emission limit values for medium size engine combustion plants (amendment proposal by Euromot)

Pollutant	Type of installation	Liquid fuels	Natural Gas	Gaseous fuels other than natural gas
NO _x	Engines	190	95 ⁽²⁾	190 [or delete column for "other gaseous fuel" entirely]
	Gas Turbines

...

(²)190 for combined heat and power

Justification

For column "Liquid Fuels"

The value of 190 mg/Nm³ already requires the application of secondary abatement techniques.

Alternatively the ANNEX III should be removed from the Directive Proposal entirely.

References

/1/ "Commission Staff Working Document. Executive summary of the Impact Assessment"; Brussels 18.12.2013, SWD(2013) 532 Final

/2/ "Proposal for a Directive of the European parliament and of the Council on the limitation of emissions of certain pollutants into the air from medium combustion plants"; Brussels 18.12.2013 COM(2013) 919 Final, 2013/0442 (COD)

/3/ EGTEI SCR Cost Stationary engines at
http://www.unece.org/fileadmin/DAM/env/documents/2011/eb/wg5/WGSR49/Informal%20docs/17_EGTEI-Cost-stationary-engines-UNECE-06-04-2011.pdf

/4/ EMSA "The 0.1 % sulphur in fuel requirement as from 1 January 2015 in SECAs ..":
http://ec.europa.eu/environment/air/transport/pdf/Report_Sulphur_Requirement.pdf

/5/ <http://www.airclim.org/directive-national-emission-ceilings-nec>

/6/
http://www.unece.org/fileadmin/DAM/env/lrtap/full%20text/ECE_EB.AIR_111_Add1_2_E.pdf

/7/ Emissions from diesel generation in Small Island Power Systems – Recommendations for the revision of the Gothenburg Protocol; Eurelectric July 2011; at
http://www.unece.org/fileadmin/DAM/env/documents/2011/eb/wg5/WGSR49/Informal%20docs/EURELECTRIC-diesel_engines_and_Gothenburg_protocol-July_2011.pdf

/8/ EU LCP BREF 2006 at http://eippcb.jrc.ec.europa.eu/reference/BREF/lcp_bref_0706.pdf

/9/ IPPC Reference Document on Economics and Cross-Media Effects. July 2006 at
http://eippcb.jrc.ec.europa.eu/reference/BREF/ecm_bref_0706.pdf

ANNEX UNECE Gothenburg Protocol amended May 2012, Annex V, from /6/**9. Stationary engines:****Table 4****Limit values for NO_x emissions released from new stationary engines**

<i>Engine type, power, fuel specification</i>	<i>ELV^{a,b,c} (mg/m³)</i>
Gas engines > 1 MWth	
Spark ignited (= Otto) engines	95 (enhanced lean burn)
all gaseous fuels	190 (Standard lean burn or rich burn with catalyst)
Dual fuel engines > 1 MWth	
In gas mode (all gaseous fuels)	190
In liquid mode (all liquid fuels) ^d	
1 MWth–20 MWth	225
>20 MWth	225
Diesel engines > 5 MWth	
(compression ignition)	
<i>Slow (< 300 rpm)/medium (300 rpm–</i>	
<i>1,200 rpm)/ speed</i>	
5 MWth–20 MWth	
Heavy Fuel Oil (HFO) and bio-oils	225
Light Fuel Oil (LFO) and Natural	190
Gas (NG)	
>20 MWth	
HFO and bio-oils	190
LFO and NG	190
<i>High speed (>1,200 rpm)</i>	190

Note: The reference oxygen content is 15%.³

^a These ELVs do not apply to engines running less than 500 hours a year.

^b Where Selective Catalytic Reduction (SCR) cannot currently be applied for technical and logistical reasons like on remote islands or where the availability of sufficient amounts of high quality fuel cannot be guaranteed, a transition period of 10 years after the entry into force of the present Protocol for a Party may be applied for diesel engines and dual fuel engines during which the following ELVs apply:

- Dual fuel engines: 1,850 mg/m³ in liquid mode; 380 mg/m³ in gas mode.
- Diesel engines — Slow (< 300 rpm) and medium (300 rpm–1,200 rpm)/speed: 1,300 mg/m³ for engines between 5 MWth and 20 MWth and 1,850 mg/m³ for engines > 20 MWth.
- Diesel engines — High speed (> 1,200 rpm): 750 mg/m³.

^c Engines running between 500 and 1,500 operational hours per year may be exempted from compliance with these ELVs in case they are applying primary measures to limit NO_x emissions and meet the ELVs set out in footnote b.

^d A Party may derogate from the obligation to comply with the emission limit values for combustion plants using gaseous fuel which have to resort exceptionally to the use of other fuels because of a sudden interruption in the supply of gas and for this reason would need to be equipped with a waste gas purification facility. The exception time period shall not exceed 10 days except where there is an overriding need to maintain energy supplies.

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